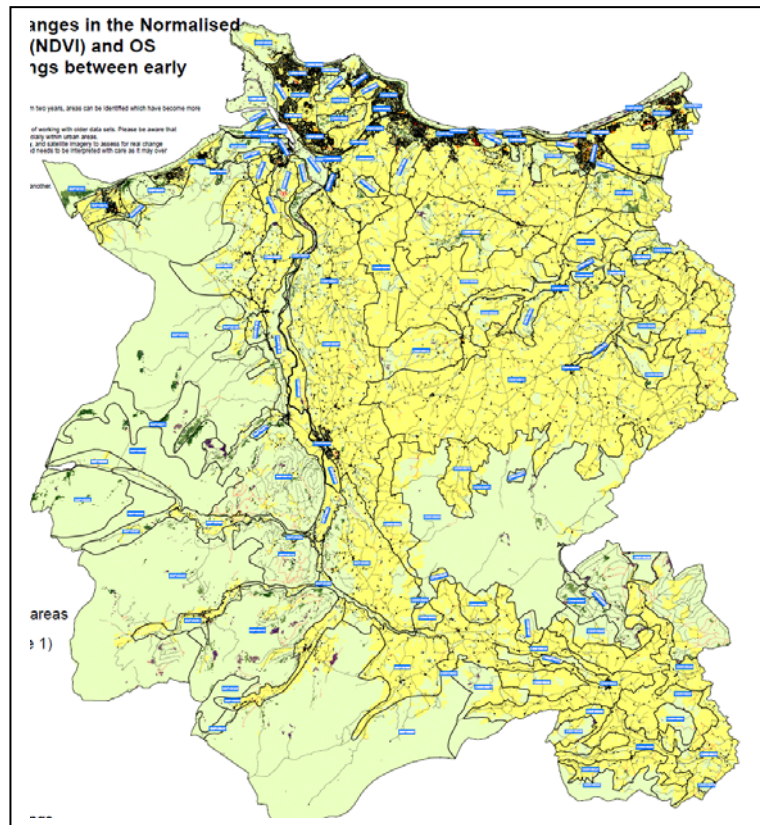


INTERPRETATION OF LANDMAP VISUAL & SENSORY CHANGE DETECTION PACKS: CONWY



Final Report

for

Natural Resources Wales

February 2014

Email: sw@whiteconsultants.co.uk
Web: www.whiteconsultants.co.uk

Tel: 029 2043 7841

CONTENTS

1. Introduction	2
2. Potential changes in the study area	3

Appendix

LANDMAP visual and sensory data change detection sheets

1. Introduction

1.1. Natural Resources Wales commissioned White Consultants in August 2013 to undertake the interpretation of LANDMAP Visual & Sensory aspect change detection packs for Powys and North Wales excluding the Isle of Anglesey. This study is for Conwy excluding the Snowdonia National Park. It is intended to provide the desk study evidence base to understand where changes may have occurred since the original LANDMAP assessments.

1.2. The tasks set out in the brief are as follows:

Stage 1

- Desk study of the Change Detection Pack data using techniques derived from the pilot study and the technical report guidance provided.
- Identification of areas of significant landscape change.
- Preparation of a tabulated excel table filling in columns 1-4 and 8.
- Map extracts to show potential boundary changes if appropriate for clarity

Stage 2a

- Review change questionnaire responses from local authorities provided by NRW.
- Preparation of a tabulated excel table filling in column 5 and amending 8 as necessary.

Stage 2b

- Review changes from other resources provided by NRW.
- Preparation of a tabulated excel table filling in column 6 and amending 8 as necessary.

Stage 2- report and check for Consistency report changes

- Checking if any changes have already been implemented in Consistency report changes on latest LANDMAP dataset
- Prepare a short summary report of key changes and influences for each authority.

1.3. The Change Detection Pack data provided includes the following:

- OS maps
- Existing Visual and Sensory layer
- Aerial photographs dated 2001 and 2010.
- Phase 1 Habitat Survey 2008/9
- Tranquillity Map of Wales
- Normalised Difference Vegetation Index [NDVI]
- Mastermap road and building change maps
- Segment Density/Complexity Maps [SD]
- Seasonal change derived from Phase 1 mapping
- Mega Change Map - incorporating key changes in a single map (based on simplified NDVI and Mastermap)

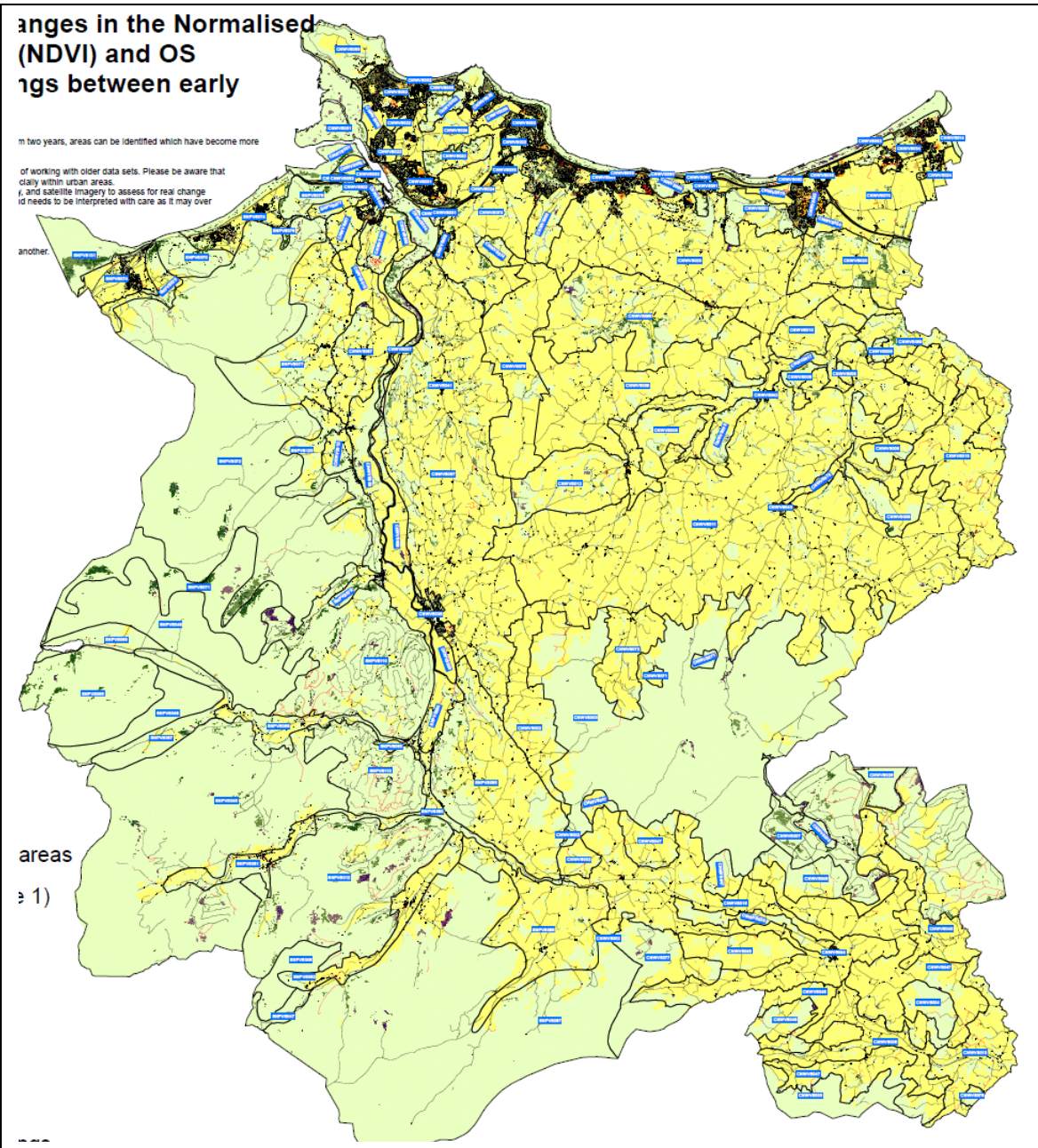
The information is in hard copy form and in GIS.

- 1.4. Other GIS data has been obtained including broadleaf planting from NRW which have proved invaluable in places.
- 1.5. Simon White has liaised with the client and Environment Systems on the data and inputs from various local planning authorities. The method has been derived from the guidance and from previous monitoring experience in South Wales.
- 1.6. The most useful data used in the study have been the Mastermap road and built form change, NDVI, the Mega change map (see Figure) and 2001 and 2009/2010 aerial photographs. This has allowed assessment at a broad and detailed level with small scale changes to be identified in places.
- 1.7. The most detailed data are the aerial photos which have been used to verify indications of change in other data. The 2001 and 2010 photos are the most useful to identify and verify significant change but they have a very different colour balance and degree of contrast, and were flown at different times of year. This makes identification of change more difficult.
- 1.8. The input of Local Authority staff has been found to be very useful, especially to identify changes which would not necessarily be able to be detected remotely.
- 1.9. The purpose of the study is not to refine/improve the current Collector text or aspect area GIS boundaries. It is only to monitor and note potential change. This can then be verified in the field. There are limitations to this desk based stage. It is possible that some noted changes may not be perceptible, eg young broadleaf planting in conifer plantations, and some may not be regarded as significant at the Level 3 scale of the assessment/aspect area. Other changes may affect a wider area than noted at the desk study eg the effect of wind farms on nearby aspect areas. Some changes may not be perceptible at the desk study level but are apparent on site. An example could be single wind turbines. Therefore, the site survey element of the study is essential, particularly for the visual and sensory aspect, where perception and changes at key points for public access can be very important.
- 1.10. The tabulated list of potential changes drawn from the analysis for each relevant aspect area is set out in the Appendix and is available as a separate excel table.
- 1.11. The issues that have arisen from the study of this specific area are discussed in Section 2.0.

2. Potential changes in the study area

- 2.1. Within the study area the key changes appear to be:
 - Effect of onshore windfarms, directly and indirectly, especially around the Clocaenog Forest Strategic Search Area.
 - Effect of offshore windfarms on coastal character.
 - Expansion of settlements especially along the coastal strip.
 - Expansion of commercial development areas.
 - Continued/expanding limestone extraction at Llandulas with potential increase in effect on the landscape/seascape.
 - Forest plantation felling and broadleaf plantings which may change the character eg Clocaenog Forest.
 - Expansion of caravan park use at Gorse Hill, south of Conwy.

These are illustrated by maps and aerial photos on the following pages.

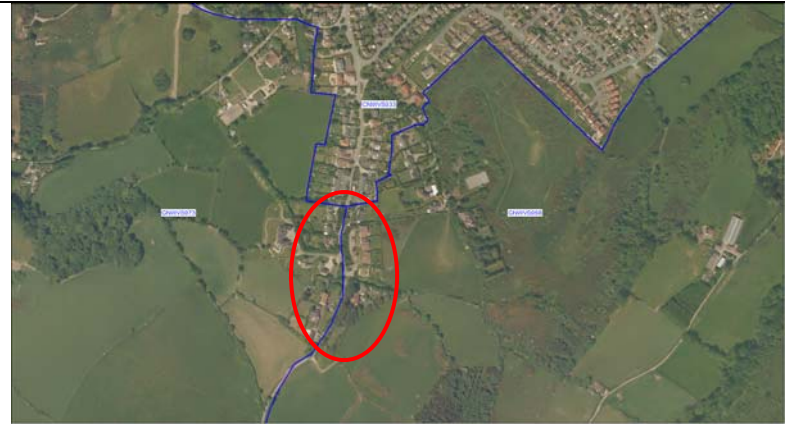





Mega change map

Legend

- Visual & Sensory Landscape areas
- Agricultural fields (from Phase 1)
- Much less productive
- Less productive
- Little or no change
- More productive
- Much more productive
- No change in Roads or Buildings
- Change in roads
- Change in buildings

Aerial view of change	Potential/actual change
	<p>CNWVS003</p> <p>Extension to Moel Maelogen windfarm into the Denbigh Moors</p>
	<p>CNWVS007 and CNWVS 026</p> <p>Effect of nearby windfarms in Denbighshire on the character of Clocaenog Forest and Llyn Brenig</p>
	<p>CNWVS031 Llandudno and Colwyn Bay expansion</p>
	<p>CNWVS033</p> <p>Colwyn Bay expansion south (1)</p>

	<p>CNWVS033 Colwyn Bay expansion south (2)</p>
	<p>CNWVS034 Abergele and Towyn expansion</p>
	<p>CNWVS060 Llandulas quarry expansion</p>
	<p>CNWVS067 Gorse Hill Caravan park expansion/intensification</p>

APPENDIX

LANDMAP VISUAL AND SENSORY DATA CHANGE DETECTION SHEETS: CONWY

Aspect area		Change- indicated by:					Stage 2c	
UID	Name	OS data, aerial photos and roads and buildings	Complexity maps (segment density) and NVDI	Phase 1 and seasonal change	LPA workshop/questionnaire	Other resources	Field-work	Recommended LANDMAP amendment- GIS or survey or both
CNWVS003	Denbigh Moors	Aerial and built form shows extended wind turbine bases and roads at Moel Maelogen	NVDI- wind turbine bases and roads of Moel Maelogen windfarm; Segment density- less complex					Survey- add description of Moel Maelogen additional turbines to south if necessary. Site survey to ascertain possible changes to vegetation cover but not apparent from aerial photos- could be seasonal change
CNWVS004	Mwdwl Eithin					NRW- consented Nant Bach windfarm in area- may have an effect by time of site survey although not evident yet		Survey- possibly amend description regarding consented windfarm if constructed, including tranquillity.
CNWVS006	Cerw and Medrad narrow valleys					NRW- consented Nant Bach windfarm adjacent to area- may have an effect by time of site survey although not evident yet		Survey- possibly amend description regarding consented Nant Bach windfarm in adjacent area if constructed, including tranquillity.
CNWVS007	Clocaenog Forest West	Aerial- felling evident; Built form shows access roads in forestry	NVDI-felling indicated			NRW- broadleaf planting plans		Survey- possibly amendments to description to mention felling of compartments and some broadleaf planting especially around Alwen

								reservoir. Intervisible with windfarms and so backcloth and tranquillity may be affected.	
Aspect area		Change- indicated by:						Stage 2c	
UID	Name	OS data, aerial photos and roads and buildings	Complexity maps (segment density) and NVDI	Phase 1 and seasonal change	LPA workshop/questionnaire	Other resources	Field-work	Recommended LANDMAP amendment-GIS or survey or both	
CNWVS011	Central ridges and valleys	Aerial photo shows wind turbine bases and roads at Moel Maelogen to south						Survey- add description of Moel Maelogen additional turbines as backcloth to southern fringes if necessary	
CNWVS012	Foel Caledeirau plantations and woodland	Aerial- felling evident	NVDI-felling indicated					Survey- possible description changes to conifer plantation compartment felling centrally and two to west and management recommendation changes	
CNWVS016	Merddwr and Ceirw valleys	Built change map - indicates track possibly to single turbines			Single turbines along A5 corridor between Cerrigydrudion and Pentrefoelas			Survey- possibly need to amend description to mention single turbines and effect on tranquillity and guidelines	
CNWVS020	Kimnel Manor and environs				Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect	
CNWVS021	Cefn yr Ogof and environs				Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect	

Aspect area		Change- indicated by:					Stage 2c	
UID	Name	OS data, aerial photos and roads and buildings	Complexity maps (segment density) and NVDI	Phase 1 and seasonal change	LPA workshop/questionnaire	Other resources	Field-work	Recommended LANDMAP amendment- GIS or survey or both
CNWVS023	Dulas Lowlands	Built change map and Aerial- expansion of town and quarry to the north east			Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect. GIS- amend boundary to north and west to accommodate town expansion and quarry expansion to north east.
CNWVS024	Wyden and Ganol valleys	Built change map and Aerial- expansion of towns to east and west						GIS- reduce to accommodate Llandudno expansion and Colwyn Bay expansion.
CNWVS026	Llyn Brenig	Built change map and aerial- turbines evident				NRW data and WG renewable energy map- national windfarm mapping indicates Llyn Brenig and Foel Goch windfarms to the east which are highly noticeable		Survey- add description of backcloth of Tir Mostyn/Llyn Brenig windfarms to north east if necessary
CNWVS031	Llandudno Junction and Deganwy	Built change map and Aerial- expansion of town						GIS- amend boundary to north and east to accommodate housing and commercial development respectively
CNWVS032	Llandudno	Built change map and Aerial- expansion of town						GIS- amend boundary to south

Aspect area		Change- indicated by:					Stage 2c	
UID	Name	OS data, aerial photos and roads and buildings	Complexity maps (segment density) and NVDI	Phase 1 and seasonal change	LPA workshop/questionnaire	Other resources	Field-work	Recommended LANDMAP amendment- GIS or survey or both
CNWVS033	Colwyn Bay	Built change map and Aerial-expansion of town			Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect. GIS- amend boundary to south and to west to accommodate housing and commercial respectively.
CNWVS034	Towyn and Kinmel Bay	Built change map and Aerial-expansion of settlement			Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect. GIS- amend boundary to the south to accommodate expansion of settlement.
CNWVS035	Abergele	Built change map and Aerial-expansion of settlement			Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect. GIS- amend boundary to south.
CNWVS036	Penrhyn Bay				Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect
CNWVS038	Llanrwst	Built change map and Aerial-expansion of settlement						GIS- amend boundary to south

Aspect area		Change- indicated by:					Stage 2c	
UID	Name	OS data, aerial photos and roads and buildings	Complexity maps (segment density) and NVDI	Phase 1 and seasonal change	LPA workshop/questionnaire	Other resources	Field-work	Recommended LANDMAP amendment- GIS or survey or both
CNWVS047	Merddwr Ceirw Alwen upper valley sides	Built change map - indicates track possibly to single turbines			Single turbines along A5 corridor between Cerrigydrudion and Pentrefoelas	NRW- consented Nant Bach windfarm in area- may have an effect by time of site survey although not evident yet		Survey- possibly amend description regarding consented windfarm if constructed, including tranquillity, and also possibly for single turbines in or in vicinity of area and guidelines
CNWVS048	Maes-newyddion uplands	Built change map and Aerial - shows wind turbine bases and roads at expanded Hafoty Uchaf and indicates track possibly to single turbines			Single turbines along A5 corridor between Cerrigydrudion and Pentrefoelas	NRW- national windfarm mapping indicates Maesgwyn windfarm to the south which is highly noticeable		Survey- add description of Hafoty Uchaf additional turbines as backcloth if necessary and possibly need to amend description to mention single turbines in area or vicinity and effect on tranquillity and guidelines
CNWVS049	Moel Gwern-nannau	Aerial photo shows wind turbine bases and roads at expanded Hafoty Uchaf to the south				NRW- national windfarm mapping indicates Maesgwyn windfarm to the south which is highly noticeable		Survey- add description of Hafoty Uchaf additional turbines if necessary
CNWVS050	Foel Goch		Segment density- less complex					Survey- site survey to ascertain possible changes to vegetation cover but not apparent from aerial photos- could be seasonal change.

Aspect area		Change- indicated by:					Stage 2c	
UID	Name	OS data, aerial photos and roads and buildings	Complexity maps (segment density) and NVDI	Phase 1 and seasonal change	LPA workshop/questionnaire	Other resources	Field-work	Recommended LANDMAP amendment-GIS or survey or both
CNWVS052	Llandudno to Kinmel Bay intertidal				Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind; major sea defence works between Old Colwyn and Rhos on Sea and Colwyn bay pier derelict.			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect. Slightly amend description to include recent coastal protection works, including removal of groynes and also possibly to include Colwyn Bay pier and derelict appearance with management guidelines.
CNWVS053	A55				Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect
CNWVS056	Morfa Penrhyn				Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect
CNWVS059	River Conwy valley floor					NRW- Anglesey and Snowdonia seascape		Survey- consider amending description to accommodate power station redevelopment

						assessment- Dolgarrog Power station redevelopment		
Aspect area		Change- indicated by:					Stage 2c	
UID	Name	OS data, aerial photos and roads and buildings	Complexity maps (segment density) and NVDI	Phase 1 and seasonal change	LPA workshop/ questionnaire	Other resources	Field- work	Recommended LANDMAP amendment- GIS or survey or both
CNWVS060	Llandulas and Raynes Quarries	Built change map and Aerial- expansion of quarry to the east						GIS- amend boundary to accommodate quarry expansion to south east and correct boundary with Llandulas.
CNWVS061	Llandulas	Built change map and aerial- expansion of quarry to the east			Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect. GIS- amend boundary to south to accommodate quarry.
CNWVS062	Llandulas Coast				Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect.
CNWVS063	Great Orme				Rhyl Flats offshore wind farm is apprent from area			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect.
CNWVS065	Conwy estuary golf courses	Built change map and Aerial- expansion of town						GIS- amend boundary to accommodate expansion of Llandudno to far eastern corner.
CNWVS066	Dulas Valley	Aerial- felling evident	NVDI-felling indicated					Survey- possible description changes to conifer plantation compartment felling to west and management

								recommendation changes.
Aspect area		Change- indicated by:					Stage 2c	
UID	Name	OS data, aerial photos and roads and buildings	Complexity maps (segment density) and NVDI	Phase 1 and seasonal change	LPA workshop/questionnaire	Other resources	Field-work	Recommended LANDMAP amendment- GIS or survey or both
CNWVS067	Conwy valley sides and hills	Built change map and Aerial-expansion of Llanrwst to south; expansion of Gorse Hill caravan park			Gorse Hill caravan park extension			Survey- amend description to include Gorse Hill caravan park extension into woodland - possible detractor and possibly need to amend guidelines to control further development; GIS- amend boundary to east on south side of Llanrwst.
CNWVS068	Nant y Glyn valley	Built change map and Aerial-expansion of town			Rhyl Flats offshore wind farm is noticeable from the coast and higher ground behind			Survey- amend description to include views out to the Rhyl Flats windfarm and its effect. GIS- amend boundary to north to accommodate expansion of settlement.
CNWVS070	Abergele Coastal Plain	Built change map and Aerial-expansion of Abergele and Towyn/Kinmel Bay to north						GIS- amend boundary to north
CNWVS073	Llansanfrid hill and valley hinterland	Built change map and Aerial-expansion of town	NVDI-felling indicated					GIS- amend boundary to east